

**Patent claims**

1. An apparatus for reading from and/or writing to an optical recording medium (7) having at least two data layers situated one above another, having a device (4) for correcting an aberration that is experienced in the recording medium (7) by an input beam used for reading from and/or writing to, the input beam and a beam reflected at the recording medium (7) having directions of polarization that are essentially perpendicular to one another during traversal of the device for correcting the aberration, **characterized** in that the device (4) for correcting the spherical aberration is set up such that the reflected beam traverses it uninfluenced, and in that means (12, 16, 19) for correcting the imaging of the reflected beam onto at least one detector unit (13, 15, 17, 18, 20) are provided in the further beam path.
2. The apparatus as claimed in claim 1, **characterized** in that the device (4) for correcting the spherical aberration consists of a liquid crystal element that influences the wave front in only one direction of polarization in order to balance the spherical aberration, the quarter-wave plate (5) being arranged downstream of the device (4) in the direction of the input beam.
3. The device as claimed in claim 1 or 2, **characterized** in the correction means (12, 16, 19) provided in the further beam path are one or more beam splitters that are traversed by the reflected beam and split the latter into two or more partial beams, the individual partial beams being directed onto one detector (13, 15) each that is optimized for in each case one of the data layers.

4. The apparatus as claimed in claim 1 or 2,  
characterized in that the correction means (12, 16, 19)  
provided in the further beam path is a diffractive lens  
that is traversed by the reflected beam and splits the  
5 latter into two or more partial beams, the individual  
partial beams being directed onto one detector (17, 18)  
each that is optimized for in each case one of the data  
layers.
- 10 5. The apparatus as claimed in claim 3 or 5,  
characterized in that the data signal is obtained from  
the sum of the signals of the detectors (13, 15, 17,  
18), and in that a focus error signal and/or a track  
error signal are/is obtained from the signals of that  
15 detector (13, 15, 17, 18) which is optimized for the  
respective data layer.
6. The apparatus as claimed in claim 1 or 2,  
characterized in that the correction means (12, 16, 19)  
20 provided in the further beam path is a device (19) for  
correcting the wave front that balances the aberration.
7. The apparatus as claimed in claim 6, characterized  
in that the device (19) for correcting the wave front  
25 is a liquid crystal element.